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Taxonomic Paper

Updated list of the mosquitoes of Colombia (Diptera: Culicidae)

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Abstract

Background

A revised list of the mosquitoes (Diptera: Culicidae) known to occur in Colombia is presented. A total of 324 species from 28 genera of Culicidae are included. The species names are organized in alphabetical order according to the current generic and subgeneric classification, along with their authorship. The list is compiled in order to support mosquito research in Colombia.

New information

Our systematic review and literature survey found, by 16 February 2015, 13 records of culicid species previously overlooked by mosquito catalogs for Colombia: *Anopheles costai* da Fonseca & da Silva Ramos, 1939, *An. fluminensis* Root, 1927, *An. malefactor* Dyar & Knab, 1907, *An. shannoni* Davis, 1931, *An. vargasi* Galbadón, Cova García & Lopez, 1941, *Culex mesodenticulatus* Galindo & Mendez, 1961, *Haemagogus capricornii* Lutz, 1904, *Isostomyia espini* (Martini, 1914), *Johnbelkinia leucopus* (Dyar & Knab, 1906), *Mansonia indubitans* Dyar & Shannon, 1925, *Psorophora saeva* Dyar & Knab, 1906, *Sabethes glaucodaemon* (Dyar & Shannon, 1925), and *Wyeomyia intonca* Dyar & Knab,

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1909. Moreover, *Wyeomyia* (*Dendromyia*) *luteoventralis* Theobald, 1901 is recorded for Colombia for the first time. This work provides important insights into mosquito diversity in Colombia, using the current nomenclature and phylogenetic rankings.

Keywords

Nematocera, Neotropical Region, species account, new records.

Introduction

Currently, 3,543 species of Culicidae are formally recognized and distributed over a diverse range of habitats around the world (Harbach 2015). Colombia, one of the world's megadiverse countries, has a highly diverse mosquito fauna and a high prevalence of mosquito-borne diseases (Morrone 2006, Foley et al. 2008, Hudson 2010, Montoya-Lerma et al. 2011). The tremendous variety of ecosystems in Colombia provides environmental conditions that favor the immigration, adaptation, development and persistence of a great diversity of mosquito species (Molina et al. 2000, Olano et al. 2001, Foley et al. 2007, Barreto et al. 2008, Brochero and Quiñones 2008).

Six mosquito catalogs list species that occur in Colombia: Barreto-Reyes (1955) reported 164 species; Knight and Stone (1977) reported 250 species; Carrejo and González (1992) listed 260 recognized species; Walter Reed Medical Army (1998) reported also 260 species; and lastly, 289 species were reported in the Walter Reed Biosystematics Unit mosquito catalog (Gaffigan et al. 2014). Recent changes in mosquito taxonomy, ranking of groups, and species names (Gaffigan et al. 2013, Harbach 2015) made it crucial to compile an updated list that follows the currently accepted classification, as well as includes new and overlooked species records for the country.

Materials and methods

The species list was compiled from information available in previously published mosquito catalogs for Colombia (Barreto-Reyes 1955, Knight and Stone 1977, Carrejo and González 1992, Walter Reed Medical Army 1998, Gaffigan et al. 2014) and other publications containing species reports not included in these catalogs (Kumm et al. 1946, Osorno-Mesa 1947, Lane 1953, Arnell 1976, Wilkerson 1990, Pecor et al. 1992, Harbach 1995, Barreto et al. 1996, Lounibos et al. 1998, Vélez et al. 1998, Molina et al. 2000, Ferro et al. 2003, Liria and Navarro 2003, Porter and Wolff 2004, González and Carrejo 2007, Ferro et al. 2008, Harbach and Howard 2009, Mendenhall et al. 2011, Barajas et al. 2013). The first record for Colombia of *Wyeomyia* (*Dendromyia*) *luteoventralis* Theobald, 1901 is based on a female collected with CDC traps in September 2013 in a tropical dry forest in La Pintada (Antioquia) [N 05.63646, W 075.59002, 710m above sea level]. The specimen was

identified using Lane (1953), Motta and Lourenço-de-Oliveira (1995), Judd (1998), Motta and Lourenço-de-Oliveira (2000) as references.

The species presented in this list are arranged alphabetically by genus and subgenus. Species names are followed by their authorship and year of description, and the catalog or other source that first reported the species in Colombia. Our list follows the most recent mosquito classification compiled by Gaffigan et al. (2013) and Harbach (2015). Also, we follow the provisional '*sensu auctorum*' placement of '*Ochlerotatus* (*Protomacleaya*)', product of the polyphyletic assemblage of species reflected in the Aedini phylogeny reconstructed by Reinert et al. (2009). Junior synonyms, subspecies, biologically separate sibling species that lack formal names, and nomina dubia reported by Barreto-Reyes (1955) and Knight and Stone 1977 (*Anopheles allopha* Peryassú, 1921, *Culex aikenii* Aiken & Rowland, 1906, *Culex virgultus* Theobald, 1901, *Trichoprosopon hyperleucum* (Martini, 1931)) are not included.

List of mosquito species known to occur in Colombia

Aedeomyia (*Aedeomyia*) *squamipennis* (Lynch Arribálzaga, 1878)

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *apicimacula* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *calderoni* Wilkerson, 1991

Notes: Carrejo and González 1992

Anopheles (*Anopheles*) *costai* da Fonseca & da Silva Ramos, 1939

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

Anopheles (*Anopheles*) *eiseni* Coquillett, 1902

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *fluminensis* Root, 1927

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

Anopheles (*Anopheles*) *forattinii* Wilkerson & Sallum, 1999

Notes: González and Carrejo 2007

Anopheles (*Anopheles*) *malefactor* Dyar & Knab, 1907

Notes: Wilkerson 1990. Species previously overlooked by other mosquito catalogs for Colombia.

Anopheles (*Anopheles*) *mattogrossensis* Lutz & Neiva, 1911

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *mediopunctatus* (Lutz, 1903)

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *neomaculipalpus* Curry, 1931

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *peryassui* Dyar & Knab, 1908

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *pseudomaculipes* (Peryassú, 1908)

Notes: Knight and Stone 1977

Anopheles (*Anopheles*) *pseudopunctipennis* Theobald, 1901

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *punctimacula* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Anopheles (*Anopheles*) *shannoni* Davis, 1931

Notes: González and Carrejo 2007. Species previously overlooked by other mosquito catalogs for Colombia.

***Anopheles* (*Anopheles*) *vestitipennis* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Anopheles* (*Kerteszia*) *bambusicolus* Komp, 1937**

Notes: Barreto-Reyes 1955

***Anopheles* (*Kerteszia*) *bellator* Dyar & Knab, 1906**

Notes: Knight and Stone 1977

***Anopheles* (*Kerteszia*) *boliviensis* (Theobald, 1905)**

Notes: Barreto-Reyes 1955

***Anopheles* (*Kerteszia*) *cruzii* Dyar & Knab, 1908**

Notes: Knight and Stone 1977

***Anopheles* (*Kerteszia*) *homunculus* Komp, 1937**

Notes: Barreto-Reyes 1955

***Anopheles* (*Kerteszia*) *lepidotus* Zavortink, 1973**

Notes: Knight and Stone 1977

***Anopheles* (*Kerteszia*) *neivai* Howard, Dyar & Knab, 1913**

Notes: Barreto-Reyes 1955

***Anopheles* (*Kerteszia*) *pholidotus* Zavortink, 1973**

Notes: González and Carrejo 2007

***Anopheles* (*Lophopodomyia*) *gilesi* (Peryassú, 1908)**

Notes: Barreto-Reyes 1955

***Anopheles* (*Lophopodomyia*) *oiketorakras* Osorno-Mesa, 1947**

Notes: Osorno-Mesa 1947, Barreto-Reyes 1955

Anopheles (*Lophopodomyia*) *squamifemur* Antunes, 1937

Notes: Barreto-Reyes 1955

Anopheles (*Lophopodomyia*) *vargasi* Gabaldón, Cova García & Lopez, 1941

Notes: Osorno-Mesa 1947. Species previously overlooked by other mosquito catalogs for Colombia.

Anopheles (*Nyssorhynchus*) *albimanus* Wiedemann, 1820

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *albitarsis* Lynch Arribálzaga, 1878

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *aquasalis* Curry, 1932

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *argyritarsis* Robineau-Desvoidy, 1827

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *benarrochi* Gabaldón, Cova García & Lopez, 1941

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *braziliensis* Chagas, 1907

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *darlingi* Root, 1926

Notes: Barreto-Reyes 1955

Anopheles (*Nyssorhynchus*) *dunhami* Causey, 1945

Notes: Lounibos et al. 1998

Anopheles (*Nyssorhynchus*) *evansae* Brèthes, 1926

Notes: Knight and Stone 1977

***Anopheles* (*Nyssorhynchus*) *marajoara* Galvão & Damasceno, 1942**

Notes: Knight and Stone 1977

***Anopheles* (*Nyssorhynchus*) *nuneztovari* Gabaldón, 1940**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *oswaldoi* Peryassú, 1922**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *parvus* Chagas, 1907**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *rangeli* Gabaldón, Cova García & Lopez, 1940**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *strodei* Root, 1926**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *triannulatus* Neiva & Pinto, 1922**

Notes: Barreto-Reyes 1955

***Anopheles* (*Nyssorhynchus*) *trinkae* Faran, 1979**

Notes: Carrejo and González 1992

***Anopheles* (*Stethomyia*) *kompi* Edwards, 1930**

Notes: Barreto-Reyes 1955

***Anopheles* (*Stethomyia*) *nimbus* (Theobald, 1902)**

Notes: Barreto-Reyes 1955

***Anopheles* (*Stethomyia*) *thomasi* Shannon, 1933**

Notes: Knight and Stone 1977

Chagasia ablusa Harbach, 2009

Notes: Harbach and Howard 2009

Chagasia bathana Dyar, 1928

Notes: Knight and Stone 1977

Chagasia bonneae Root, 1927

Notes: Barreto-Reyes 1955

Chagasia fajardi (Lutz, 1904)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *albicosta* (Peryassú, 1908)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *arribalzagae* (Theobald, 1903)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *fasciolata* (Lynch Arribálzaga, 1891)

Notes: Carrejo and González 1992

Coquillettidia (*Rhynchotaenia*) *hermanoi* (Lane & Coutinho, 1940)

Notes: Knight and Stone 1977

Coquillettidia (*Rhynchotaenia*) *juxtamansonia* (Chagas, 1907)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *lynchi* (Shannon, 1931)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *nigricans* (Coquillett, 1904)

Notes: Barreto-Reyes 1955

Coquillettidia (*Rhynchotaenia*) *venezuelensis* (Theobald, 1912)

Notes: Barreto-Reyes 1955

Culex flochi Duret, 1969

Notes: Knight and Stone 1977.The subgeneric affiliation of this species is uncertain.

Culex ocellatus Theobald, 1903

Notes: Knight and Stone 1977. The subgeneric affiliation of this species is uncertain.

Culex (*Aedinus*) *accelerans* Root, 1927

Notes: Ferro et al. 2003

Culex (*Aedinus*) *amazonensis* (Lutz, 1905)

Notes: Barreto-Reyes 1955

Culex (*Anoedioporpa*) *bamborum* Rozeboom & Komp, 1948

Notes: Barreto-Reyes 1955

Culex (*Anoedioporpa*) *browni* Komp, 1936

Notes: Knight and Stone 1977

Culex (*Anoedioporpa*) *conservator* Dyar & Knab, 1906

Notes: Knight and Stone 1977

Culex (*Anoedioporpa*) *corrigani* Dyar & Knab, 1907

Notes: Knight and Stone 1977

Culex (*Anoedioporpa*) *restrictor* Dyar & Knab, 1906

Notes: Mendenhall et al. 2011

Culex (*Belkinomyia*) *eldridgei* Adames & Galindo, 1973

Notes: Knight and Stone 1977

Culex (*Carrollia*) *antunesi* Lane & Whitman, 1943

Notes: Knight and Stone 1977

Culex (*Carrollia*) *bihaicola* Dyar & Núñez Tovar, 1928

Notes: Barreto-Reyes 1955

Culex (*Carrollia*) *bonnei* Dyar, 1921

Culex (*Carrollia*) *infoliatus* Bonne-Wepster & Bonne, 1920

Notes: Barreto-Reyes 1955

Culex (*Carrollia*) *kompi* Valencia, 1973

Notes: Knight and Stone 1977

Culex (*Carrollia*) *metempsytus* Dyar, 1921

Notes: Barreto-Reyes 1955

Culex (*Carrollia*) *secundus* Bonne-Wepster & Bonne, 1920

Notes: Barreto-Reyes 1955

Culex (*Carrollia*) *urichi* (Coquillett, 1906)

Notes: Barreto-Reyes 1955

Culex (*Carrollia*) *wilsoni* Lane & Whitman, 1943

Notes: Knight and Stone 1977

Culex (*Culex*) *abnormalis* Lane, 1936

Notes: Knight and Stone 1977

Culex (*Culex*) *acharistus* Root, 1927

Notes: Carrejo and González 1992

Culex (*Culex*) *alani* Forattini, 1965

Notes: Knight and Stone 1977

Culex (*Culex*) *archegus* Dyar, 1929

Notes: Knight and Stone 1977

Culex (*Culex*) *bickleyi* Forattini, 1965

Notes: Knight and Stone 1977

Culex (*Culex*) *bonneae* Dyar & Knab, 1906

Notes: Knight and Stone 1977

Culex (*Culex*) *brevispinosus* Bonne-Wepster & Bonne, 1920

Notes: Barreto-Reyes 1955

Culex (*Culex*) *camposi* Dyar, 1925

Notes: Knight and Stone 1977

Culex (*Culex*) *chidesteri* Dyar, 1921

Notes: Barreto-Reyes 1955

Culex (*Culex*) *chitae* Duret, 1967

Notes: Knight and Stone 1977

Culex (*Culex*) *coronator* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Culex*) *declarator* Dyar & Knab, 1906

Notes: Carrejo and González 1992

Culex (*Culex*) *erythrothorax* Dyar, 1907

Notes: Gaffigan et al. 2014

Culex (*Culex*) *inflictus* Theobald, 1901

Notes: Barreto-Reyes 1955

Culex (*Culex*) *levicastilloi* Lane, 1945

Notes: Gaffigan et al. 2014

Culex (*Culex*) *maracayensis* Evans, 1923

Notes: Barreto-Reyes 1955

Culex (*Culex*) *mollis* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Culex*) *nigripalpus* Theobald, 1901

Notes: Barreto-Reyes 1955

Culex (*Culex*) *ousqua* Dyar, 1918

Notes: Knight and Stone 1977

Culex (*Culex*) *quinquefasciatus* Say, 1823

Notes: Barreto-Reyes 1955

Culex (*Culex*) *saltanensis* Dyar, 1928

Notes: Gaffigan et al. 2014

Culex (*Culex*) *spinosus* Lutz, 1905

Notes: Knight and Stone 1977

Culex (*Culex*) *stigmatosoma* Dyar, 1907

Notes: Barreto-Reyes 1955

Culex (*Culex*) *thriambus* Dyar, 1921

Notes: Knight and Stone 1977

***Culex* (*Culex*) *usquatissimus* Dyar, 1922**

Notes: Knight and Stone 1977

***Culex* (*Culex*) *usquatus* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex* (*Melanoconion*) *adamesi* Sirivanakarn & Galindo, 1980**

Notes: Knight and Stone 1977

***Culex* (*Melanoconion*) *albinensis* Bonne-Wepster & Bonne, 1920**

Notes: Knight and Stone 1977

***Culex* (*Melanoconion*) *alogistus* Dyar, 1918**

Notes: Knight and Stone 1977

***Culex* (*Melanoconion*) *bastagarius* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Culex* (*Melanoconion*) *batesi* Rozeboom & Komp, 1948**

Notes: Barreto-Reyes 1955

***Culex* (*Melanoconion*) *caudelli* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Culex* (*Melanoconion*) *comatus* Senevet & Abonnenc, 1939**

Notes: Barreto-Reyes 1955

***Culex* (*Melanoconion*) *commevynensis* Bonne-Wepster & Bonne, 1920**

Notes: Barreto-Reyes 1955

***Culex* (*Melanoconion*) *comminutor* Dyar, 1920**

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *conspirator* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *coppenamensis* Bonne-Wepster & Bonne, 1920

Notes: Carrejo and González 1992

Culex (*Melanoconion*) *creole* Anduze, 1949

Notes: Carrejo and González 1992

Culex (*Melanoconion*) *crybda* Dyar, 1924

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *distinguendus* Dyar, 1928

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *dunni* Dyar, 1918

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *eastor* Dyar, 1920

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *educator* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *egcymon* Dyar, 1923

Notes: Pecor et al. 1992

Culex (*Melanoconion*) *elevator* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *epanastasis* Dyar, 1922

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *erraticus* (Dyar & Knab, 1906)

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *ferreri* Duret, 1968

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *garcesi* Duret, 1968

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *inadmirabilis* Dyar, 1928

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *inhibitator* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *iolambdis* Dyar, 1918

Notes: Lane 1953

Culex (*Melanoconion*) *johnsoni* Galindo & Mendez, 1961

Notes: Pecor et al. 1992

Culex (*Melanoconion*) *kummi* Komp & Rozeboom, 1951

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *lucifugus* Komp, 1936

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *mesodenticulatus* Galindo & Mendez, 1961

Notes: Barreto et al. 1996. Species previously overlooked by other mosquito catalogs for Colombia.

Culex (*Melanoconion*) *ocossa* Dyar & Knab, 1919

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *panocossa* Dyar, 1923

Notes: Gaffigan et al. 2014

Culex (*Melanoconion*) *pedroi* Sirivanakarn & Belkin, 1980

Notes: Ferro et al. 2003

Culex (*Melanoconion*) *phlogistus* Dyar, 1920

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *pilosus* (Dyar & Knab, 1906)

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *quasihibridus* Galindo & Blanton, 1954

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *rooti* Rozeboom, 1935

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *serratimarge* Root, 1927

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *spissipes* (Theobald, 1903)

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *sursumptor* Dyar, 1924

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *taeniopus* Dyar & Knab, 1907

Notes: Barreto-Reyes 1955

Culex (*Melanoconion*) *tecmarsis* Dyar, 1918

Notes: Pecor et al. 1992

Culex (*Melanoconion*) *theobaldi* (Lutz, 1904)

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *vomerifer* Komp, 1932

Notes: Knight and Stone 1977

Culex (*Melanoconion*) *zeteki* Dyar, 1918

Notes: Knight and Stone 1977

Culex (*Microculex*) *carioca* Lane & Whitman, 1951

Notes: Knight and Stone 1977

Culex (*Microculex*) *chryselatus* Dyar & Knab, 1919

Notes: Barreto-Reyes 1955

Culex (*Microculex*) *daumastocampa* Dyar & Knab, 1908

Notes: Knight and Stone 1977

Culex (*Microculex*) *elongatus* Rozeboom & Komp, 1950

Notes: Barreto-Reyes 1955

Culex (*Microculex*) *gaudeator* Dyar and Knab, 1907

Notes: Gaffigan et al. 2014

Culex (*Microculex*) *imitator* Theobald, 1903

Notes: Barreto-Reyes 1955

Culex (*Microculex*) *inimitabilis* Dyar & Knab, 1906

Notes: Gaffigan et al. 2014

Culex (*Microculex*) *jenningsi* Dyar & Knab, 1907

Notes: Knight and Stone 1977

Culex (*Microculex*) *kukenan* Anduze, 1942

Notes: Knight and Stone 1977

Culex (*Microculex*) *pleuristriatus* Theobald, 1903

Notes: Carrejo and González 1992

Culex (*Microculex*) *stonei* Lane & Whitman, 1943

Notes: Gaffigan et al. 2014

Culex (*Phenacomyia*) *airozai* Lane, 1945

Notes: Gaffigan et al. 2014

Culex (*Phenacomyia*) *corniger* Theobald, 1903

Notes: Barreto-Reyes 1955

Culex (*Phenacomyia*) *lactator* Dyar & Knab, 1906

Notes: Gaffigan et al. 2014

Culex (*Tinolestes*) *latisquama* (Coquillett, 1906)

Notes: Carrejo and González 1992

Deinocerites atlanticus Adames, 1971

Notes: Knight and Stone 1977

Deinocerites barretoi Adames, 1971

Notes: Knight and Stone 1977

Deinocerites cancer Theobald, 1901

Notes: Carrejo and González 1992

Deinocerites colombianus Adames, 1971

Notes: Knight and Stone 1977

***Deinocerites curiche* Adames, 1971**

Notes: Knight and Stone 1977

***Deinocerites dyari* Belkin & Hogue, 1959**

Notes: Knight and Stone 1977

***Deinocerites melanophylum* Dyar & Knab, 1907**

Notes: Knight and Stone 1977

***Deinocerites pseudes* Dyar & Knab, 1909**

Notes: Knight and Stone 1977

***Galindomyia leei* Stone & Barreto, 1969**

Notes: Knight and Stone 1977

***Georgecraigius* (*Horsfallius*) *fluviatilis* (Lutz, 1904)**

Notes: Carrejo and González 1992

***Haemagogus* (*Conopostegus*) *clarki* (Galindo, Carpenter & Trapido, 1953)**

Notes: Knight and Stone 1977

***Haemagogus* (*Conopostegus*) *leucocelaenus* (Dyar & Shannon, 1924)**

Notes: Barreto-Reyes 1955

***Haemagogus* (*Haemagogus*) *anastasionis* Dyar, 1921**

Notes: Barreto-Reyes 1955

***Haemagogus* (*Haemagogus*) *andinus* Osorno-Mesa, 1944**

Notes: Barreto-Reyes 1955

***Haemagogus* (*Haemagogus*) *boshelli* Osorno-Mesa, 1944**

Notes: Barreto-Reyes 1955

Haemagogus (*Haemagogus*) *capricornii* Lutz, 1904

Notes: Kumm et al. 1946. Species previously overlooked by other mosquito catalogs for Colombia.

Haemagogus (*Haemagogus*) *celeste* Dyar & Nuñez Tovar, 1927

Notes: Knight and Stone 1977

Haemagogus (*Haemagogus*) *chalcospilans* Dyar, 1921

Notes: Barreto-Reyes 1955

Haemagogus (*Haemagogus*) *equinus* Theobald, 1903

Notes: Barreto-Reyes 1955

Haemagogus (*Haemagogus*) *janthinomys* Dyar, 1921

Notes: Knight and Stone 1977

Haemagogus (*Haemagogus*) *lucifer* (Howard, Dyar & Knab, 1913)

Notes: Barreto-Reyes 1955

Haemagogus (*Haemagogus*) *spegazzinii* Brèthes, 1912

Notes: Barreto-Reyes 1955

Haemagogus (*Haemagogus*) *splendens* Williston, 1896

Notes: Barreto-Reyes 1955

Howardina arborealis (Bonne-Wepster & Bonne, 1920)

Notes: Barreto-Reyes 1955

Howardina eleanorae (Berlin, 1969)

Notes: Knight and Stone 1977

Howardina fulvithorax (Lutz, 1904)

Notes: Gaffigan et al. 2014

Howardina leei **(Berlin, 1969)**

Notes: Knight and Stone 1977

Howardina marinkellei **(Berlin, 1969)**

Notes: Knight and Stone 1977

Howardina osornoi **(Berlin, 1969)**

Notes: Knight and Stone 1977

Howardina pseudodominicii **(Komp, 1936)**

Notes: Knight and Stone 1977

Howardina quadrivittata **(Coquillett, 1902)**

Notes: Barreto-Reyes 1955

Howardina septemstriata **(Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

Howardina sexlineata **(Theobald, 1901)**

Howardina whitmorei **(Dunn, 1918)**

Notes: Barreto-Reyes 1955

Isostomyia espini **(Martini, 1914)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

Johnbelkinia leucopus **(Dyar & Knab, 1906)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

Johnbelkinia longipes **(Fabricius, 1805)**

Notes: Barreto-Reyes 1955

Johnbelkinia ulopus (Dyar & Knab, 1906)

Notes: Knight and Stone 1977

Limatus asulleptus (Theobald, 1903)

Notes: Barreto-Reyes 1955

Limatus durhami Theobald, 1901

Notes: Barreto-Reyes 1955

Lutzia (*Lutzia*) *allostigma* Howard, Dyar & Knab, 1915

Notes: Barreto-Reyes 1955

Lutzia (*Lutzia*) *bigoti* Bellardi, 1862

Notes: Barreto-Reyes 1955

Mansonia (*Mansonia*) *humeralis* Dyar & Knab, 1916

Notes: Barreto-Reyes 1955

Mansonia (*Mansonia*) *indubitans* Dyar & Shannon, 1925

Notes: Ferro et al. 2008. Species previously overlooked by other mosquito catalogs for Colombia.

Mansonia (*Mansonia*) *pseudotitillans* (Theobald, 1901)

Notes: Barreto-Reyes 1955

Mansonia (*Mansonia*) *titillans* (Walker, 1848)

Notes: Barreto-Reyes 1955

Mansonia (*Mansonia*) *wilsoni* (Barreto & Coutinho, 1944)

Notes: Knight and Stone 1977

Ochlerotatus argyrothorax (Bonne-Wepster & Bonne, 1920)

Notes: Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' *sensu auctorum*.

Ochlerotatus berlini (Schick, 1970)

Notes: Knight and Stone 1977. Species belonging to subgenus "*Protomacleaya*'*sensu auctorum*.

Ochlerotatus braziliensis (Gordon & Evans, 1922)

Notes: Knight and Stone 1977. Species belonging to subgenus '*Protomacleaya*' *sensu auctorum*.

Ochlerotatus buenaventura (Schick, 1970)

Notes: Knight and Stone 1977. Species belonging to subgenus "*Protomacleaya*' *sensu auctorum*.

Ochlerotatus euiris (Dyar, 1922)

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Ochlerotatus insolitus (Coquillett, 1906)

Notes: Knight and Stone 1977. Species belonging to subgenus "*Protomacleaya*' *sensu auctorum*.

Ochlerotatus milleri (Dyar, 1922)

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Ochlerotatus scutellalbum (Boshell-Manrique, 1939)

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Ochlerotatus terrens (Walker, 1856)

Notes: Barreto-Reyes 1955. Species belonging to subgenus '*Protomacleaya*' *sensu auctorum*.

Ochlerotatus upatensis (Anduze & Hecht, 1943)

Notes: Carrejo and González 1992. The subgeneric affiliation of this species is uncertain.

Ochlerotatus zavortinki (Schick, 1970)

Notes: Knight and Stone 1977. Species belonging to subgenus "*Protomacleaya*' *sensu auctorum*.

Ochlerotatus (*Chrysoconops*) *fulvus* (Wiedemann, 1828)

Notes: Barreto-Reyes 1955

Ochlerotatus (*Culicelsa*) *taeniorhynchus* (Wiedemann, 1821)

Notes: Barreto-Reyes 1955

Ochlerotatus (*Ochlerotatus*) *angustivittatus* (Dyar & Knab, 1907)

Notes: Barreto-Reyes 1955

Ochlerotatus (*Ochlerotatus*) *bogotanus* (Arnell, 1976)

Notes: Arnell 1976

Ochlerotatus (*Ochlerotatus*) *comitatus* (Arnell, 1976)

Notes: Knight and Stone 1977

Ochlerotatus (*Ochlerotatus*) *condolescens* (Dyar & Knab, 1907)

Notes: Knight and Stone 1977

Ochlerotatus (*Ochlerotatus*) *crinifer* (Theobald, 1903)

Notes: Barreto-Reyes 1955

Ochlerotatus (*Ochlerotatus*) *deficiens* (Arnell, 1976)

Notes: Knight and Stone 1977

***Ochlerotatus* (*Ochlerotatus*) *euplocamus* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Ochlerotatus* (*Ochlerotatus*) *pectinatus* (Arnell, 1976)**

Notes: Knight and Stone 1977

***Ochlerotatus* (*Ochlerotatus*) *scapularis* (Rondani, 1848)**

Notes: Barreto-Reyes 1955

***Ochlerotatus* (*Protoculex*) *aenigmaticus* (Cerqueira & Costa, 1946)**

Notes: Gaffigan et al. 2014

***Ochlerotatus* (*Protoculex*) *hastatus* (Dyar, 1922)**

Notes: Barreto-Reyes 1955

***Ochlerotatus* (*Protoculex*) *nubilus* (Theobald, 1903)**

Notes: Carrejo and González 1992

***Ochlerotatus* (*Protoculex*) *serratus* (Theobald, 1901)**

Notes: Barreto-Reyes 1955

***Onirion personatum* (Lutz, 1904)**

Notes: Knight and Stone 1977

***Orthopodomyia albicosta* (Lutz, 1904)**

Notes: Barreto-Reyes 1955

***Orthopodomyia fascipes* (Coquillett, 1906)**

Notes: Barreto-Reyes 1955

***Orthopodomyia phyllozoa* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

Psorophora (*Grabhamia*) *cingulata* (Fabricius, 1805)

Notes: Barreto-Reyes 1955

Psorophora (*Grabhamia*) *confinnis* (Lynch Arribálzaga, 1891)

Notes: Barreto-Reyes 1955

Psorophora (*Janthinosoma*) *albigenu* (Peryassú, 1908)

Notes: Knight and Stone 1977

Psorophora (*Janthinosoma*) *albipes* (Theobald, 1907)

Notes: Barajas et al. 2013

Psorophora (*Janthinosoma*) *cyanescens* (Coquillett, 1902)

Notes: Barreto-Reyes 1955

Psorophora (*Janthinosoma*) *ferox* (von Humboldt, 1819)

Notes: Barreto-Reyes 1955

Psorophora (*Janthinosoma*) *lutzi* (Theobald, 1901)

Notes: Barreto-Reyes 1955

Psorophora (*Janthinosoma*) *pilosa* Duret, 1971

Notes: Knight and Stone 1977

Psorophora (*Janthinosoma*) *pseudoalbipes* Duret, 1971

Notes: Knight and Stone 1977

Psorophora (*Janthinosoma*) *varipes* (Coquillett, 1904)

Notes: Barreto-Reyes 1955

Psorophora (*Psorophora*) *ciliata* (Fabricius, 1794)

Notes: Barreto-Reyes 1955

Psorophora (*Psorophora*) *cilipes* (Fabricius, 1805)

Notes: Barreto-Reyes 1955

Psorophora (*Psorophora*) *lineata* (von Humboldt, 1819)

Notes: Barreto-Reyes 1955

Psorophora (*Psorophora*) *saeva* Dyar & Knab, 1906

Notes: Liria and Navarro 2003. Species previously overlooked by other mosquito catalogs for Colombia.

Runchomyia (*Ctenogoeldia*) *magna* (Theobald, 1905)

Notes: Knight and Stone 1977

Sabethes (*Peytonulus*) *identicus* Dyar & Knab, 1907

Notes: Gaffigan et al. 2014

Sabethes (*Peytonulus*) *ignotus* Harbach, 1995

Notes: Harbach 1995

Sabethes (*Peytonulus*) *undosus* (Coquillett, 1906)

Notes: Carrejo and González 1992

Sabethes (*Peytonulus*) *xenismus* Harbach, 1995

Notes: Harbach 1995

Sabethes (*Sabethes*) *albiprivus* Theobald, 1903

Notes: Barreto-Reyes 1955

Sabethes (*Sabethes*) *belisarioi* Neiva, 1908

Notes: Barreto-Reyes 1955

Sabethes (*Sabethes*) *cyaneus* (Fabricius, 1805)

Notes: Barreto-Reyes 1955

***Sabethes* (*Sabethes*) *quasicyaneus* Peryassú, 1922**

Notes: Knight and Stone 1977

***Sabethes* (*Sabethes*) *tarsopus* Dyar & Knab, 1908**

Notes: Barreto-Reyes 1955

***Sabethes* (*Sabethinus*) *intermedius* (Lutz, 1904)**

Notes: Barreto-Reyes 1955

***Sabethes* (*Sabethoides*) *chloropterus* (von Humboldt, 1819)**

Notes: Barreto-Reyes 1955

***Sabethes* (*Sabethoides*) *glaucodaemon* (Dyar and Shannon, 1925)**

Notes: Molina et al. 2000. Species previously overlooked by other mosquito catalogs for Colombia.

***Sallumia hortator* (Dyar & Knab, 1907)**

Notes: Knight and Stone 1977

***Shannoniana fluviatilis* (Theobald, 1903)**

Notes: Barreto-Reyes 1955

***Stegomyia albopicta* (Skuse, 1895)**

Notes: Vélez et al. 1998. The subgeneric affiliation of this species is uncertain.

***Stegomyia* (*Stegomyia*) *aegypti* (Linnaeus, 1762)**

Notes: Knight and Stone 1977

***Toxorhynchites* (*Lynchiella*) *bambusicola* (Lutz & Neiva, 1913)**

Notes: Barreto-Reyes 1955

***Toxorhynchites* (*Lynchiella*) *guadeloupensis* (Dyar & Knab, 1906)**

Notes: Knight and Stone 1977

***Toxorhynchites* (*Lynchiella*) *haemorrhoidalis* (Fabricius, 1787)**

Notes: Knight and Stone 1977

***Toxorhynchites* (*Lynchiella*) *hypoptes* (Knab, 1907)**

Notes: Knight and Stone 1977

***Toxorhynchites* (*Lynchiella*) *moctezuma* (Dyar & Knab, 1906)**

Notes: Gaffigan et al. 2014

***Toxorhynchites* (*Lynchiella*) *theobaldi* (Dyar & Knab, 1906)**

Notes: Barreto-Reyes 1955

***Trichoprosopon andinum* Levi-Castillo, 1953**

Notes: Carrejo and González 1992

***Trichoprosopon compressum* Lutz, 1905**

Notes: Barreto-Reyes 1955

***Trichoprosopon digitatum* (Rondani, 1848)**

Notes: Barreto-Reyes 1955

***Trichoprosopon evansae* Antunes, 1942**

Notes: Barreto-Reyes 1955

***Trichoprosopon lanei* (Antunes, 1937)**

Notes: Barreto-Reyes 1955

***Trichoprosopon pallidiventer* (Lutz, 1905)**

Notes: Barreto-Reyes 1955

***Uranotaenia* (*Uranotaenia*) *apicalis* Theobald, 1903**

Notes: Carrejo and González 1992

Uranotaenia (*Uranotaenia*) *calosomata* Dyar & Knab, 1907

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *coatzacoalcos* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *geometrica* Theobald, 1901

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *hystera* Dyar & Knab, 1913

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *leucoptera* (Theobald, 1907)

Notes: Carrejo and González 1992

Uranotaenia (*Uranotaenia*) *lowii* Theobald, 1901

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *pulcherrima* Lynch Arribálzaga, 1891

Notes: Barreto-Reyes 1955

Uranotaenia (*Uranotaenia*) *riverai* Duret, 1970

Notes: Knight and Stone 1977

Wyeomyia chalcocephala Dyar & Knab, 1906

Notes: Knight and Stone 1977. The subgeneric affiliation of this species is uncertain.

Wyeomyia clasoleuca Dyar & Knab, 1908

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Wyeomyia melanocephala Dyar & Knab, 1906

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Wyeomyia moerbista (Dyar & Knab, 1919)

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Wyeomyia serratoria (Dyar & Nunez Tovar, 1927)

Notes: Barreto-Reyes 1955. The subgeneric affiliation of this species is uncertain.

Wyeomyia (*Antunesmyia*) *colombiana* Lane, 1945

Notes: Barreto-Reyes 1955

Wyeomyia (*Antunesmyia*) *flavifacies* Edwards, 1922

Notes: Barreto-Reyes 1955

Wyeomyia (*Cruzmyia*) *kummi* Lane & Cerqueira, 1942

Notes: Knight and Stone 1977

Wyeomyia (*Cruzmyia*) *mattinglyi* Lane, 1953

Notes: Knight and Stone 1977

Wyeomyia (*Decamyia*) *ulocoma* (Theobald, 1903)

Notes: Carrejo and González 1992

Wyeomyia (*Decamyia*) *pseudopecten* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Wyeomyia (*Dendromyia*) *complosa* (Dyar, 1928)

Notes: Barreto-Reyes 1955

Wyeomyia (*Dendromyia*) *jocosa* (Dyar & Knab, 1908)

Notes: Knight and Stone 1977

Wyeomyia (*Dendromyia*) *luteoventralis* Theobald, 1901

Notes: Species newly recorded for Colombia (see Material & methods for detailed locality information).

Wyeomyia (*Dendromyia*) *ypsipola* Dyar, 1922

Notes: Barreto-Reyes 1955

Wyeomyia (*Dodecamyia*) *aphobema* Dyar, 1918

Notes: Barreto-Reyes 1955

Wyeomyia (*Exallomyia*) *tarsata* Lane & Cerqueira, 1942

Notes: Knight and Stone 1977

Wyeomyia (*Hystatomyia*) *chocoensis* Porter & Wolff, 2004

Notes: Porter and Wolff 2004

Wyeomyia (*Hystatomyia*) *intonca* Dyar & Knab, 1910

Notes: Porter and Wolff 2004. Species previously overlooked by other mosquito catalogs for Colombia.

Wyeomyia (*Miamyia*) *codiocampa* Dyar & Knab, 1906

Notes: Carrejo and González 1992

Wyeomyia (*Miamyia*) *hosautos* Dyar & Knab, 1907

Notes: Barreto-Reyes 1955

Wyeomyia (*Miamyia*) *oblita* (Lutz, 1904)

Notes: Barajas et al. 2013

Wyeomyia (*Triamyia*) *aporonoma* Dyar & Knab, 1906

Notes: Barreto-Reyes 1955

Wyeomyia (*Wyeomyia*) *arthrostigma* (Lutz, 1905)

Notes: Carrejo and González 1992

***Wyeomyia* (*Wyeomyia*) *celaenocephala* Dyar & Knab, 1906**

Notes: Barreto-Reyes 1955

***Wyeomyia* (*Wyeomyia*) *melanopus* Dyar, 1919**

Notes: Carrejo and González 1992

***Wyeomyia* (*Wyeomyia*) *pertinans* (Williston, 1896)**

Notes: Carrejo and González 1992

***Wyeomyia* (*Wyeomyia*) *scotinomus* (Dyar & Knab, 1907)**

Notes: Barreto-Reyes 1955

***Wyeomyia* (*Wyeomyia*) *simmsi* (Dyar & Knab, 1908)**

Notes: Carrejo and González 1992

Discussion

This paper comprises the most complete and up-to-date list of mosquito species known to occur in Colombia, with a total of 324 species and 28 genera listed according to the latest nomenclature and classification. Our systematic review and literature survey found, by 16 February 2015, 13 records of culicid speciesoverlooked by previous mosquito catalogs for Colombia. These are: *Anopheles costai*, *An. fluminensis* and *An. shannoni* (cited by González and Carrejo 2007), *An. malefactor* (cited by Wilkerson 1990), *An. vargasi* (cited by Osorno-Mesa 1947), *Culex mesodenticulatus* (cited by Barreto et al. 1996), *Haemagogus capricornii* (cited by Kumm et al. 1946), *Isostomyia espini*, *Johnbelkinia leucopus* and *Sabethes glaucodaemon* (cited by Molina et al. 2000), *Mansonia indubitans* (cited by Ferro et al. 2008), *Psorophora saeva* (cited by Liria and Navarro 2003 and *Wyeomyia intonca* (cited by Porter and Wolff 2004).

In addition, we record *Wyeomyia* (*Dendromyia*) *luteoventralis* for the first time from Colombia. This species was originally described by Theobald (1901) from three females caught on human bait in Paraná state (Brazil). *Wyeomyia luteoventralis* is the type species of the subgenus *Dendromyia* Theobald, 1903 (Motta and Lourenço-de-Oliveira 1995). This species had been previously collected in Brazil, French Guiana, British Guiana, and Venezuela (Gaffigan et al. 2014); however, it has rarely been reported in biological, ecological and taxonomic studies in South America (Motta and Lourenço-de-Oliveira 1995).

Although this report represents the most comprehensive list of mosquito species for Colombia, the 324 species included in this updated listing are unlikely to be a complete

inventory of the Colombian mosquito fauna. Biodiversity data suggest that around 1,000 mosquito species will eventually be described from southern U.S.A. to Colombia, Ecuador, and Peru (Belkin et al. 1965, Foley et al. 2008). Colombia, with its diversity of landscapes, is highly species-rich and is a potential hotspot of mosquito endemism (Foley et al. 2008). Furthermore, ongoing and rapid development in Colombia is expected in the next decade with a loss of habitat associated with the growth of urban centers, which will undoubtedly have an impact on species diversity (Montoya-Lerma et al. 2011). Moreover, the finding of new species to the Colombian fauna such as *Wyeomyia luteoventralis* indicates that future sampling may reveal further species records which could help improve the taxonomy and provide a more accurate estimate of Colombia's mosquito diversity. This work provides important insights into the mosquito diversity of Colombia. We expect it to serve as a useful platform for future work on the mosquitoes of Colombia as well as provide a context for non-vector species.

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